An Coimisiún um
Rialáil Cumarsáide
Commission for
Communications Regulation

Response to Consultation and Decision on the Review of the Satellite Earth Station Licensing Regime

Non-confidential Submissions to Document 23/32

Submissions to Consultation

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An Coimisiún um Rialáil Cumarsáide
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Consultation	23/32
Decision	23/96

Content

1 Kuiper Systems LLC[1]

[1] A wholly owned subsidiary of Amazon.com Services LLC (“Amazon”).

Commission for Communications Regulation
One Dockland Central
Guild Street
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28 April 2023

Dear ComReg,

AMAZON'S SUBMISSION TO COMREG DOCUMENT 23/32

Kuiper Systems LLC (**Kuiper**), a wholly owned subsidiary of Amazon.com Services LLC (**Amazon**) welcomes the opportunity to provide our observations to the Commission for Communications Regulation (**ComReg**) Document 23/32 on a Further Consultation Review of the Satellite Earth Station (**SES**) Licensing Regime in relation to the Draft Decision and Draft Regulations.

As noted in our response of 12 August 2022, we commend ComReg's proactive efforts to update the SES licensing regime in Ireland. We value ComReg's engagement with stakeholders, which will encourage investment in satellite services and associated innovation, and express our appreciation for the thorough assessment by ComReg in response to the prior submissions. We trust that our comments below will assist ComReg and are pleased to discuss further.

Background

Kuiper plans to launch and operate a constellation of non-geostationary satellite orbit (**NGSO**) satellites in low earth orbit (**LEO**) known as the Kuiper System to deliver high-speed, low-latency broadband connectivity to unserved and underserved communities around the world, including in Ireland where Kuiper will be a complement to the Irish Government's ambitious plans under the National Broadband Plan. The Kuiper System will operate in the 27.5-30.0 GHz range for Earth-to-space communications (uplink), and in the 17.7-18.6 GHz and 18.8-20.2 GHz ranges for space-to-Earth communications (downlink). The Kuiper System will be deployed at several altitudes and in multiple orbital inclinations in order to provide high-speed, low-latency broadband to a wide range of customers, including individual households, schools, hospitals, businesses, government agencies, disaster relief operations, mobile operators, and other organizations working in places without reliable internet connectivity.

ComReg's RIA in Document 23/32

ComReg welcomes views on how Option 4 could be implemented so as to:

i. **not dissuade larger bandwidth users from deploying SES in Ireland because fees that may become prohibitively high,**

ii. **not inefficiently choke off demand from lower value users,**

iii. **mitigate the risk of excessive over recovery of ComReg's administrative costs**

Amazon's Comments on ComReg's Response to Consultation

Alignment with ECC and CEPT

In its response to ComReg Document 22/56, Amazon noted that it supports ComReg aligning the Irish licensing regime with international standards and the relevant European Directives/Decisions (such as Directive 2014/53/EU, ECC/DEC/(05)08, ECC/DEC/(05)01, ECC Decisions 13(01), ECC Decisions 15(04)).

In order not to dissuade larger bandwidth users from deploying SES in Ireland, Amazon notes that alignment with wider European and international norms adopted by ECC and CEPT are a key factor in maintaining Ireland as an attractive location in which to deploy SES. For that reason, Amazon welcomes ComReg's commitment to maintain an approach aligned with the relevant European Directives and Decisions as set out in Document 23.32 (para. 2.95).

Fees (Section 2.7)

In its response to ComReg Document 22/56, Amazon supported ComReg's preferred approach of Option 4 (retention of bandwidth) to simplify the proposed fee calculation and make the fees clearer to calculate for operators.

Overall, Amazon continues to support Option 4 and appreciates ComReg's assessment of a concave parameter in this instance, which it understands is introduced in an effort to reduce the risk of over-recovery and results in the marginal price per MHz falling as the amount of bandwidth licensed increases. Amazon acknowledges that lower licence fees will help to attract operators to deploy in Ireland with additional economic benefits. Further, Amazon considers that this will support ComReg's efforts in Option 4 to promote competition and facilitate satellite operators to deploy.

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Amazon greatly values the opportunity to offer our views, and would be delighted to discuss these with ComReg in further detail.

Yours Sincerely,

Gonzalo de Dios
Head of Global Licensing
Project Kuiper

2 National Space Centre Limited

NATIONAL SPACE CENTRE

Commission for Communications Regulation
One Dockland Central
Dublin D01 E4X0
Ireland

27th April 2023

Subject: National Space Centre Limited´s response to COMREG April 2023 Consultation Document 23/32.

National Space Centre Limited (NSC) would like to thank the Commission for Communications Regulation (ComReg) for inviting submissions on the above document and would like to comment and respond on the assessments provided therein.

NSC supports the views of ComReg expressed in Document 23/32 and welcomes its observations on Industry responses to the overall Consultation on SES Licensing thus far.

NSC particularly supports ComReg´s intention to revise the fee structure for spectrum licensing and the proposal to adopt the Option 4 Concave pricing model (as expressed in Fees 2.7.4.). We feel this achieves balance, by maintaining Ireland´s commercial competitiveness for those looking to operate within the European region whilst reflecting the need to recover fair value from this resource, on behalf of the Irish state.

Additionally, NSC welcomes and supports the observations and assessments made by ComReg, in response to Industry submissions to 22/56 and 22/56a, in the following sections:

Licence Types 2.2.4. Removal of TES licence and replacement with single licence for multiple antennas. NSC welcomes this and agrees that this better reflects industry current needs and changes in technology over time.

Frequency Bands 2.3.4. NSC strongly welcomes the agreement that the Sub 3GHz bands referenced in 2.34 and 2.36 should be opened, thereby enabling commercial development of this sector in the future.

Sharing and Compatibility 2.4.4. NSC welcomes the proposals for an Inter-Operator Coordination framework as we feel this will encourage cooperation between the applicant and the interested party. It is also right and proper that ComReg reserve the right to rule on the validity (or any lack thereof) of any observations made, when such cooperation cannot be achieved.

Information Policy 2.4.4. NSC would welcome the expansion of Siteviewer, as it would provide more information when performing e.g. project feasibility studies. However, we

would have some reservations with regard to general public disclosure and so welcome the intention to consult further, as per 2.7.3.

Licence Duration 2.6.4. NSC supports the proposed approach. NSC supports ComReg´s opinion that there should be a reasonable expectation of renewal, without the right to indefinite renewal. However, NSC suggests that the ability to renew a licence should not be negatively impacted by any observations made by interested parties, during any licence period, until such times as ComReg finds those observations to be valid.

In summary, NSC supports ComReg´s Draft Decision as set out in Chapter 4 of Doc 23/32.

Yours Sincerely,

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Bruce Hannah
Chief Technical Officer
National Space Centre Limited

3 SpaceX

28 April, 2023

An Coimisiún um Rialáil Cumarsáide
Commission for Communications Regulation
1 Lárcheantar na nDugaí, Sráid na nGildeanna, BÁC 1, Éire, D01 E4X0.
One Dockland Central, Guild Street, Dublin 1, Ireland, D01 E4X0.

Re: *Review of the Satellite Earth Station Licensing Scheme: Response to Consultation, Draft Decision with Draft Regulations, and Further Consultation (ComReg 23/32)*

To Whom It May Concern:

Following our previous submission, Starlink Internet Services Ltd. ("SpaceX") appreciates the opportunity to provide further comments to the Commission for Communications Regulation ("ComReg") regarding its release of the Review of the Satellite Earth Station Licensing Scheme, Draft Decision with Draft Regulations, and Further Consultation (ComReg 23/32) (the "Draft Decision").[1]

While SpaceX continues to believe the spectrum fee option 5 is the most appropriate option, it appreciates that ComReg has opted to employ a factor to decrease the price per MHz as the amount of bandwidth increases. SpaceX continues to be concerned about over-recovery, especially as large bandwidth users increase their needs. Notably, if, as SpaceX and others support, ComReg decides to open access to additional spectrum in the Q/V and E-bands, the amount of over-recovery could be significant. While the fees would be less than if there were under the previous fee schedule, they still represent a potential barrier for many. In the illustration set out in Table 1, while the concave formula does reduce the per MHz cost of additional bandwidth, SpaceX notes that a single licensee of 10 GHz of spectrum (e.g., the amount of spectrum E-band SES installations could request at 71-76 and 81-86 GHz), would more than cover the entirety of the estimated administrative costs for ComReg across all bands. Thus, as contemplated in section 2.7.5, as these new bands are made available for SES, a reevaluation of the fee formula should be initiated.

Given the growing demand for high speed internet services and the unique ability of next-generation satellite services to bring them to all citizens of Ireland, SpaceX supports the intention of ComReg to open the 37.5 GHz – 43.5 GHz, 47.2 GHz – 50.2 GHz and 50.4 GHz – 52.4 GHz bands to SES to support next-generation satellite services. Similarly, SpaceX urges ComReg to also begin the process of opening the 71-76 GHz and 81-86 GHz spectrum (the "70/80 GHz band") for fixed-satellite service use. As noted previously, the ITU and CEPT have allocated the 70/80 GHz bands to the fixed-satellite service on a co-primary basis, and footnote 5.561 of the ITU table requires fixed, mobile, and broadcasting services in the 74-76 GHz band to protect stations of the fixed-satellite service. Moreover, due to their high-gain, pencil beam nature, fixed-satellite service gateway links can be designed such that they present a low risk of interference toward the horizon

[1] *See* ComReg 23/32, "Review of the Satellite Earth Station Licensing Scheme", 31 March 2023.

similar to traditional fixed links in the bands. As such, coordination between terrestrial and fixed-satellite service gateway links in the band is straightforward and achievable with only minor changes to the existing terrestrial licensing process. Lastly, contrary to the previous DotEcon report, development of 70/80 GHz antennas for satellite earth stations is far beyond the experimental stage; indeed, this spectrum will form an essential part of SpaceX's second-generation constellation and will directly benefit Irish consumers.

Further, SpaceX reiterates its request for ComReg to begin the process of authorizing the spectrum bands above 100 GHz that are allocated on a co-primary basis to the fixed-satellite service. As Ofcom noted in a recent discussion document,[2] these bands show significant promise for high-capacity satellite gateways, particularly as lower frequency bands become more congested and consumers demand greater capacity to support bandwidth-intensive, real-time applications. Moreover, the high-gain, directional nature of these high-frequency links will facilitate coexistence similar to other high frequency bands. Consistent with Ofcom's goals, ComReg should establish a licensing regime that "adopts spectrum sharing by default." SpaceX believes that a "unified light-licensing" framework supported by a transparent database of fixed links and satellite earth stations would be fit for this purpose.

SpaceX appreciates ComReg's commitment to developing a forward-looking and flexible spectrum strategy that will drive rapid deployment of much-needed connectivity to people and businesses across Ireland.

Respectfully submitted,

Brett Tarnutzer
Director, Satellite Policy

SPACE EXPLORATION TECHNOLOGIES CORP.
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[2] Ofcom, "Unlocking the potential of Terahertz radio spectrum: The role of spectrum management," Discussion Document, at 3 (2 Dec. 2021).